

herzog®

shut-off nozzles



Advantages of using a shut-off nozzle

Productivity factors

- Material saving by eliminating drooling, stringing, leakage
- Increase reliability, reduction in waste parts
- Reduction in cycle times
- Process, environmental and safety aspects
- Preventing process breakdowns while using filters
- Homogenization improvement with increased back pressure and/or static mixers

Methods

- Dosing with retracted injection units
- High-speed machines, very short cycle times
- Multi-component injection
- Vertical injection process
- Special applications (gas assisted injection molding, physical foaming, chemical foaming, melt pre-compression)
- Filter and mixer applications

Industries / Applications

- Packaging industry
- Automotive industry
- Medical technology
- Electrical engineering
- Sports equipment, outdoor

Some make nozzles
We engineer them

Advantages of choosing herzog®

Within the injection molding industry today, it has become gradually more important that only components of the highest quality can ensure a reliable process. The continual advancement of material properties such as; developments in flame retardants and weight saving agents are placing ever increasing demands on mechanical components.

You need to know you can count on a trustworthy partner to help your process run smoothly.

What are the herzog® advantages?

- Over 40 years' experience designing and manufacturing customer specific solutions
- Consistently the brand which OEMs and processors choose for reliability, quality and performance
- The largest range of powered / controllable and spring operated shut-off nozzles for all injection molding applications
- The only company which focuses solely on shut-off nozzle development
- Shut-off solutions for special processes such as melt pre-compression, gas injection, foaming, liquid silicone rubber, etc.
- Focus on close customer proximity with subsidiary sales & service centers in Switzerland, in the USA and in China as well as representation in over 20 countries worldwide
- Product development and design to meet current demand profiles
- Engineering and material selection designed for optimum processing parameters
- Short reaction times
- Servicing, retrofitting and cleaning service available

Shut-off nozzle range



Bolt shut-off nozzle type BHP

The BHP type shut-off nozzle is ideally suitable for processing at injection rates of up to 5'000 cm³ per second thanks to the straight-through, single channel design which provides optimal rheological conditions. Shearing of the material is also reduced due to direct melt flow and with the traditional, secure shut-off provided by herzog® nozzles you can reduce cycle times by dosing the next shot sooner while at the same time preventing drooling. Controlled by either pneumatic or hydraulic actuators, its carefully developed design allows for the easiest of installations and it can be adapted to any injection molding machine.

Max. injection rate: 5,000 cm³/s
Max. injection pressure: 3,000 bar at 400°C



Needle shut-off nozzle type HP

The pneumatically or hydraulically controlled nozzle type HP (*High Performance*) has a precise needle shut-off mechanism which separates the melt stream directly at the mold interface. The HP nozzle is ideally suitable for closing against high pressures and remaining closed regardless of back pressure. Therefore it is adaptable with several different technologies such as; MuCell® and other physical or chemical foaming procedures as well as melt pre-compression.

Max. injection rate: 3,500 cm³/s
Max. injection pressure: 3,000 bar at 400°C



Needle shut-off nozzle type A

The original needle shut-off nozzle from herzog® which has over the years enabled processors increase productivity. Strong, reliable and above all economical, it can be adapted to any machine type with the simplest of installations. The nozzle operation is melt pressure dependant. The axial aligned needle is held in the closed position by spring force. Once the injection pressure rises above 200 bar, it will overcome the spring force and open the nozzle.

Max. injection rate: 1,600 cm³/s
Max. injection pressure: 2,000 bar at 350°C



Needle shut-off nozzle type SHP

The needle shut-off nozzle type SHP (*Spring High Performance*) is specially designed for processors who require an uncomplicated shut-off while operating at high temperatures and high pressures. This is enabled by placing the spring system outside of the melt stream. This compact design is effortless to install and can be expanded with a low pressure drop screen type filter.

Max. injection rate: 500 cm³/s
Max. injection pressure: 3,000 bar at 400°C



Needle shut-off nozzle type NE

The NE type nozzle is specifically designed for use in elastomer processing. Rubber, liquid silicone rubber and other elastomers can be processed without fear of vulcanization due to the nozzle's integrated cooling system which uniquely regulates temperature throughout the entire nozzle. It is manufactured from corrosion resistant materials. The pneumatically controlled nozzle has a needle shut-off which stops the melt stream directly at the mold interface.

Max. injection rate: 500 cm³/s
Max. injection pressure: 3,000 bar at temperature range -20°C to 110°C

Shut-off nozzle selection chart

This table helps you to select the correct nozzle type and size for your specific process. Begin by selecting the processed material and proceed across to reach the nozzle identification. Detailed technical data for each nozzle at www.herzog-ag.com. Data in the chart is based on PS.

Type A
spring powered
needle shut-off



Type SHP
spring powered
needle shut-off



Type HP
pneumatic / hydraulic
needle shut-off



Type BHP
pneumatic / hydraulic
bolt shut-off



Type NE
pneumatic
needle shut-off



Nozzle type selection				Nozzle size selection					
Material processed	Application / Process	Shut-off mechanism	Actuation	Max. injection rate (cm ³ /s)	Max. screw diameter (mm)	Max. injection pressure (bar)	Nozzle contact force (kN)	Nozzle identification	
Common thermoplastics such as: PS, PP, HDPE, LDPE, PET, PBTSB, ABS, PA, PC, POM, PPS, PEEK	Standard injection molding	The needle shut-off is the best solution for closing the nozzle directly at the orifice / mold interface	Spring (inside)	45	20	2000	30	A0	
			Spring (outside)	500	50	2000	70	A1	
			Spring (outside)	1600	120	2000	120	A2	
		To control the melt flow a bolt shut-off system may also be used (no shut-off at the orifice)	Hydraulic or pneumatic actuator	Spring (outside)	500	50	3000	70	SHP0
				Hydraulic or pneumatic actuator	500	50	3000	70	HP0
				Hydraulic or pneumatic actuator	1600	120	3000	120	HP1
		To control the melt flow a bolt shut-off system may also be used (no shut-off at the orifice)	Hydraulic or pneumatic actuator	Hydraulic or pneumatic actuator	3500	>120	3000	180	HP2
				Hydraulic or pneumatic actuator	500	50	3000	120	BHP0
				Hydraulic or pneumatic actuator	3500	120	3000	160	BHP1
	Micro injection molding	Needle shut-off	Spring (inside)	Hydraulic or pneumatic actuator	5000	>120	3000	260	BHP2
				Spring (inside)	45	20	2000	30	A0
				Spring (inside)	500	50	3000	70	HPM0
	Physical and chemical foaming such as MuCell® or other	Needle shut-off with sensors to relay open / closed nozzle	Hydraulic or pneumatic actuator	Spring (inside)	1600	120	3000	120	HPM1
				Spring (inside)	3500	>120	3000	180	HPM2
				Spring (inside)	500	50	3000	70	HPX0
Melt precompressing such as X-Melt® or other	Needle shut-off, nozzle remains closed up to 2500 bar	Hydraulic or pneumatic actuator	Hydraulic or pneumatic actuator	1600	120	3000	120	HPX1	
			Hydraulic or pneumatic actuator	3500	>120	3000	180	HPX2	
			Hydraulic or pneumatic actuator	500	50	3000	70	HPG0	
GAIM - Gas assisted injection molding, via machine nozzle	To prevent the entry of gas into the feeding section a needle shut-off nozzle is recommended	Hydraulic or pneumatic actuator	Hydraulic or pneumatic actuator	1600	120	3000	120	HPG1	
			Hydraulic or pneumatic actuator	3500	>120	3000	180	HPG2	
			Gas pressure	< >	120	< >	< >	GM	
Complex materials; shear sensitive, high viscosity, long fibreglass, high regrind content	Bolt shut-off	Hydraulic or pneumatic actuator	Hydraulic or pneumatic actuator	500	50	3000	120	BHP0	
			Hydraulic or pneumatic actuator	3500	120	3000	160	BHP1	
			Hydraulic or pneumatic actuator	5000	>120	3000	260	BHP2	
PVC	Soft PVC	Rotary bolt shut-off	Pneumatic actuator	1600	120	2500	70	DB1	
	Hard PVC	Open nozzle	< >	< >	< >	< >	< >	OF	
Elastomers	Tempering, cooling of the machine nozzle	Needle shut-off	Pneumatic actuator	500	variable	3000	120	NE0	



Shut-off nozzle options

All nozzles are available with a range of options. Each option not only provides extra functionality but it is completely integrated into the shut-off nozzle. Existing nozzles may also be retro-fitted with any option. Please check the specific nozzle's technical documentation for compatibility. Each nozzle comes with a choice of heating and thermal measuring options.

Piston position monitoring sensor type SHE

Today's moulding processes require thorough monitoring systems for fully automated production. Disruptions must be automatically detected and transferred to the machine control. The functionality of our shut-off nozzles is monitored by the type SHE sensor. The sensor is integrated in the hydraulic or pneumatic actuator and detects the end position of the piston. The shut-off signal "open" or "closed" is passed on to the machine control through the signal amplifier.



Filtering systems - screen and gap types

Clean melts, free of foreign particles are necessary for a trouble-free and economical process. herzog® has developed a melt filter which is characterised by its compact design. The melt is fed through the filter gaps and any foreign particles which are larger than the filter gaps are retained in the guide duct. For all shut-off nozzles except type A, a low pressure drop screen filter is installed directly in the nozzle tip. For the shut-off type A; the internal spring chamber is replaced with a specially designed gap filter chamber.



Gas injection valve type GM

The GM gas tip is one of the easiest ways of achieving gas delivery into the mass core of the injected part. The injector sits in the shut-off nozzle's tip extension and the gas inlet is completely sealed by a specific valve. After the shot, the gas is injected via the tip, forces its way through the sprue bush into the soft core and displaces the mass until the cavity is filled out. Any openings on the injected part caused by the gas can be closed by post injection.



Flexible actuator supply

Our pneumatic and hydraulic actuators rotate slightly and system-dependently around the suspension axle during the piston stroke. If this pivotal movement is restricted, the piston rod may wear over a short period of time. Therefore, it is very important that any kind of rigid piping is not used when connecting air, water or hydraulic oil. Our high temperature and pressure resistant flexible actuator feed solves this problem and is available with various push-in connectors.



Corrosion and abrasion protection

The constantly changing composition of processed materials place increasing demands on machine parts. To ensure the functionality of each mechanical component, options for both abrasion protection and corrosion protection are available. Key parts of the shut-off mechanism can be supplied with harder and more durable metal grades.



... worldwide convenience

Our philosophy is to be as close as possible to our users. These relationships enable us to continually improve our range and services. While our Swiss facility is staffed by a highly qualified team who pay the utmost attention to detail when designing and manufacturing our precision instruments, our sales and service centres in three locations strive to fulfil each individual request.



- Herzog direct service
- Partner distribution and service



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Please visit our website for contact details of all our partners as well as the complete product range's technical details:
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